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TAPIRIRA LEPIDOTA (ANACARDIACEAE), A UNIQUE NEW SPECIES FROM THE GOLFO DULCE REGION OF COSTA RICA

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ABSTRACT

Tapirira lepidota Aguilar & Hammel, sp. nov., endemic to Costa Rica, is described as new to science. It differs from all other congeners by its lepidote indumentum (on virtually all parts) of peltate scales. It is compared to the locally sympatric and widespread *T. guianensis* Aubl., a usually much larger tree with smaller fruits that are purple (rather than green) at maturity.

Se describe como nueva para la ciencia *Tapirira lepidota*, endémica a Costa Rica. Difiere de todas las demás especies del género por su indumento lepidoto de escamas peltadas (presentes en todos los órganos). Se compara con la localmente simpátrica y de amplia distribución *T. guianensis*, un árbol comúnmente más grande, con frutos maduros morados y más pequeños.

Tapirira Aubl. (Anacardiaceae) is a smallish genus of forest trees widely distributed in the Neotropics from southern Mexico to Bolivia, Venezuela, Trinidad, the Guayanas, Brazil, and Paraguay. Subsequent to Mori and Mitchell's review (1990), in which five species of *Tapirira* were recognized, two additional species have been described, one from Mexico (Wendt & Mitchell 1995) and most recently another from Ecuador (Barfod 1999). The new species described here as endemic to Costa Rica differs from all others in the genus by its lepidote indumentum of abundant, if easily overlooked, peltate scales. In fact, these scales, though similar to those of the genus *Campnosperma*, once inspired a specialist in the family to reject this species from Anacardiaceae. Nevertheless, we have found no (other) inconsistencies with its inclusion in the family, snugly within the genus *Tapirira*.

Tapirira is distinguished from related genera primarily by its densely indumented pistils and pistillodes, unilocular ovaries, and fruits with a usually cartilaginous to coriaceous, inoperculate endocarp. In Costa Rica, the genus has most often been confused with *Spondias*, which differs most obviously by its leaflets usually with a distinct submarginal vein, usually bisexual flowers with apparently valvate (vs. clearly imbricate) petals, glabrous, (3–)5-locular ovaries, and fruits with a bony endocarp. As pointed out by Mitchell and Daly (1991), in technical details *Tapirira* is most easily confused with *Cyrtocarpa*, comprising five species distributed disjunctly in Mexico and

northern and eastern South America, which differs by its deciduous (vs. evergreen) habit, subsessile (vs. petiolulate) lateral leaflets with eucamptodromous (vs. brochidodromous) venation, glabrous (vs. densely indumented) pistils and pistillodes, 1–5-locular ovaries, and fruits with a bony, operculate endocarp.

TAPIRIRA LEPIDOTA Aguilar & Hammel, **sp. nov. TYPE: COSTA RICA. Puntarenas:** Cantón de Golfito, Puerto Jiménez, Río Piro, camino a Cerro Osa, 8°24' N, 83°17' W, 50 m, 17 Oct 1990 (♀ fl., fr.), *A. Chacón 1109* (holotype: CR (2 sheets); isotype: MO). Figures 1, 2.

Differing from all other species of *Tapirira* by its peltate scales and further differing from the otherwise similar *T. guianensis* by its smaller stature, smaller, included stamens, and slightly larger fruits that are green rather than purple at maturity.

Evergreen, dioecious tree, (5–)10–13(–17) m, with transparent, mucilaginous sap, the trunk with dark brown bark, indistinctly reticulate-fissured or essentially smooth, the branchlets densely lepidote to glabrescent, ± densely aculeate-lenticellate. **Leaves** ± evenly spaced along the branches, the petiole 3–23 cm, moderately or densely lepidote to glabrescent; raquis with indument similar to that of petiole; leaflets (3)4–6 per side; petiolules 0.1–0.8 cm (1–7 cm on terminal leaflet); laminae 7.5–27 × 2.7–8.5 cm, elliptic to (more often) oblong-lanceolate or oblanceolate, basally cuneate to rounded and oblique or (more often) ± symmetrical, apically obtuse to (more often) shortly acuminate, chartaceous to subcoriaceous, the upper surface glabrous, the lower more or less densely lepidote with peltate scales to ca. 0.1 mm; venation brochidodromous. **Inflorescences** axillary to apparently terminal on the distal branches, 10–32.5 cm, ± densely lepidote with peltate scales, the branches also indistinctly and sparsely puberulent with simple trichomes to ca. 0.2 mm. **Flowers** white or cream to yellow, ca. 4 mm in diam., the pedicel 1–2 mm, indistinctly and sparsely puberulent with simple trichomes to ca. 0.2 mm; sepals (calyx teeth) 5, 0.6–1 mm, ± deltate-rounded, ± densely lepidote, the apex sparsely and minutely ciliate; petals 5, 1.4–2 mm, ligulate, sparsely lepidote or (more often) glabrous, the veins straight, sometimes shortly branched. **Staminate flowers** with 10 stamens all ± the same size, the filaments included, to ca. 1 mm, the anthers dorsifixed, to ca. 0.3 mm, broadly ellipsoid; pistillode minute, barely visible as 3–5 ± linear stylodes at the center of the densely lepidote disk, or sometimes the stylodes as large as the styles of pistillate flowers (but lacking ovary). **Pistillate flowers** with the staminodes all ± the same size, to ca. 1 mm, the antipetalous ones perhaps slightly shorter; ovary ± ovoid, to ca. 1.5 mm, densely lepidote; locule 1, with 1 pendent ovule; styles 3 or 4(5), to ca. 0.2 mm, the stigmas ± capitate. **Fruits** green at maturity, 1.4–3 × 1.1–2 cm, ovoid to broadly ellipsoid, densely lepidote to glabrescent, the mesocarp transparent, ± gelatinous, sweet, the endocarp white, 0.4–0.5 mm, cartilaginous, smooth but ± reticulate veined, lacking operculum.

Flowering Feb–Apr, Jul, Sep–Dec; fruiting Jan–Apr, Oct, Dec. Mostly edges of wet forest, on slopes along streams and rivers, sometimes on slopes near the coast, 0–350(–1022) m; Costa Rica (Prov. Puntarenas), southern Pacific slope, in the Fila Costeña and the Golfo Dulce region.

Additional collections examined. **COSTA RICA. Puntarenas**: Cantón de Coto Brus, Dist. Sabalito, orilla del Río Sabalito, 20 Oct 2001 (♂ fl), *J. Gómez-L. 13818* (USJ); 8 Dec 2010 (♂ fl), *R. A. Zahawi & F. Oviedo-Brenes 633* (USJ); Cantón de Osa, Dist. Palmar, Fila Retinto al norte de Palmar Norte, Quebrada Benjamín, 23 Feb 1997 (♀ fl, fr), *B. Hammel & R. Aguilar 20860* (CR, INB); Dist. Sierpe, Bahía Chal, 10 Apr 2001 (fr), *R. Aguilar 6421* (INB); 20 Oct 2001 (♀ fl, fr), *R. Aguilar 6607* (CR, INB); 17 Aug 2001 (fr), *A. Miller et al. 220* (INB, MO); Rincón, cerca del puente sobre el Río Rincón, 15 Mar 2010 (fr), *R. Aguilar 12891* (CR, INB, MO, NY); 4 Nov 2013 (♀ fl), *R. Aguilar 14692* (photo voucher, no specimen made; see <http://www.flickr.com/search/?w=56339362@N03&q=14692>); cerca de Banegas, Los Charcos, 28 Mar 2008 (st), *R. Aguilar 10870* (NY); Drake, Progreso, 8 Dec 2008 (st), *R. Aguilar 11573* (NY); 16 Dec 2008 (st), *R. Aguilar 11578*

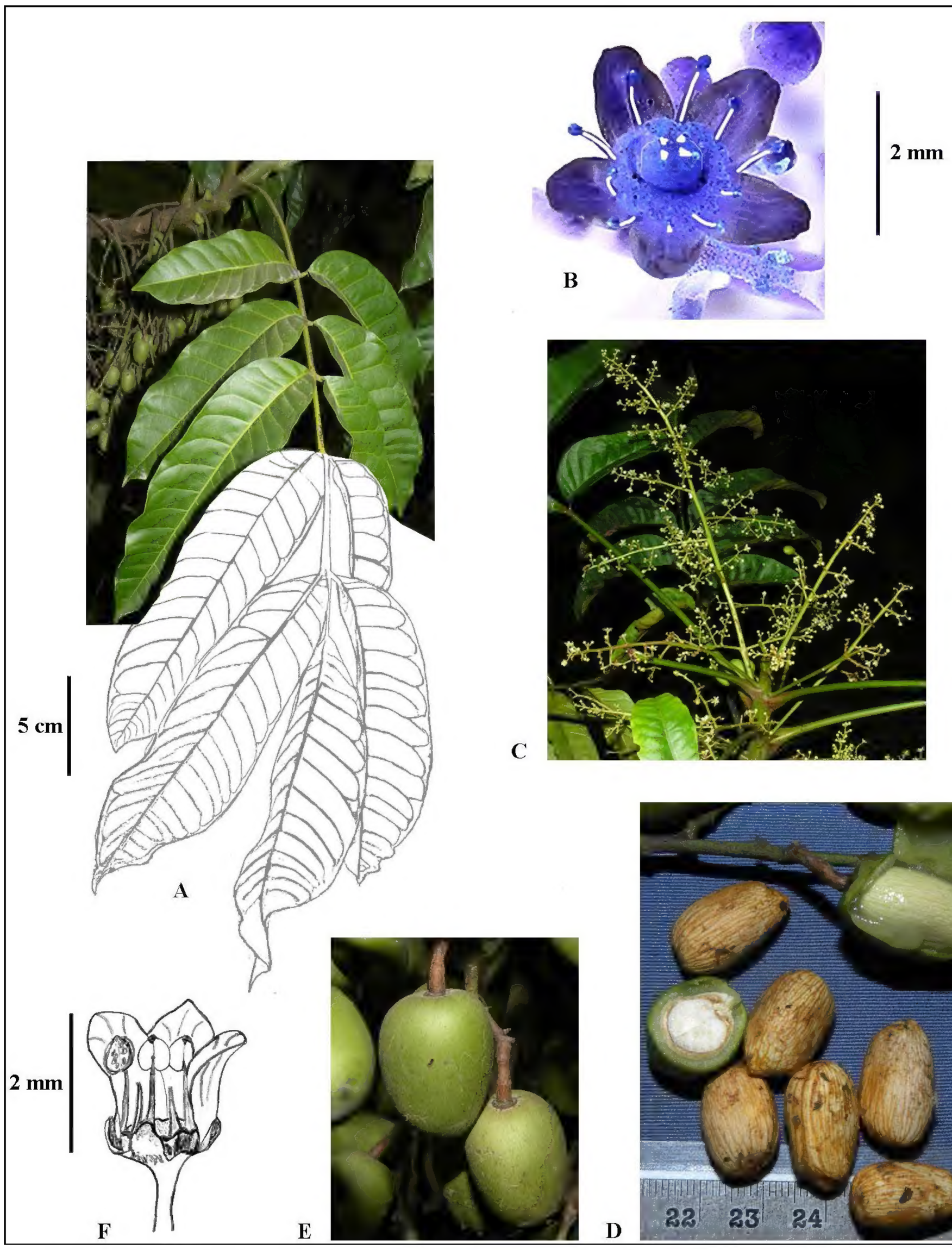

Figure 1. *Tapirira lepidota*. A, leaf on fruiting branch; B, pistillate flower (staminodes and stigmas enhanced); C, inflorescence; D, mature fruit with translucent mesocarp exposed, cleaned endocarps, and fruit cross-sectioned; E, intact mature fruits; F, staminate flower (1 sepal & 2 petals removed, 5 complete stamens and 2 anthers not shown). Photos by R. Aguilar, illustrations by B. Hammel; A, D, and E from *R. Aguilar 12891*; B and C from *R. Aguilar 11561*; F from *Fco. Quesada & M. Segura 795*.

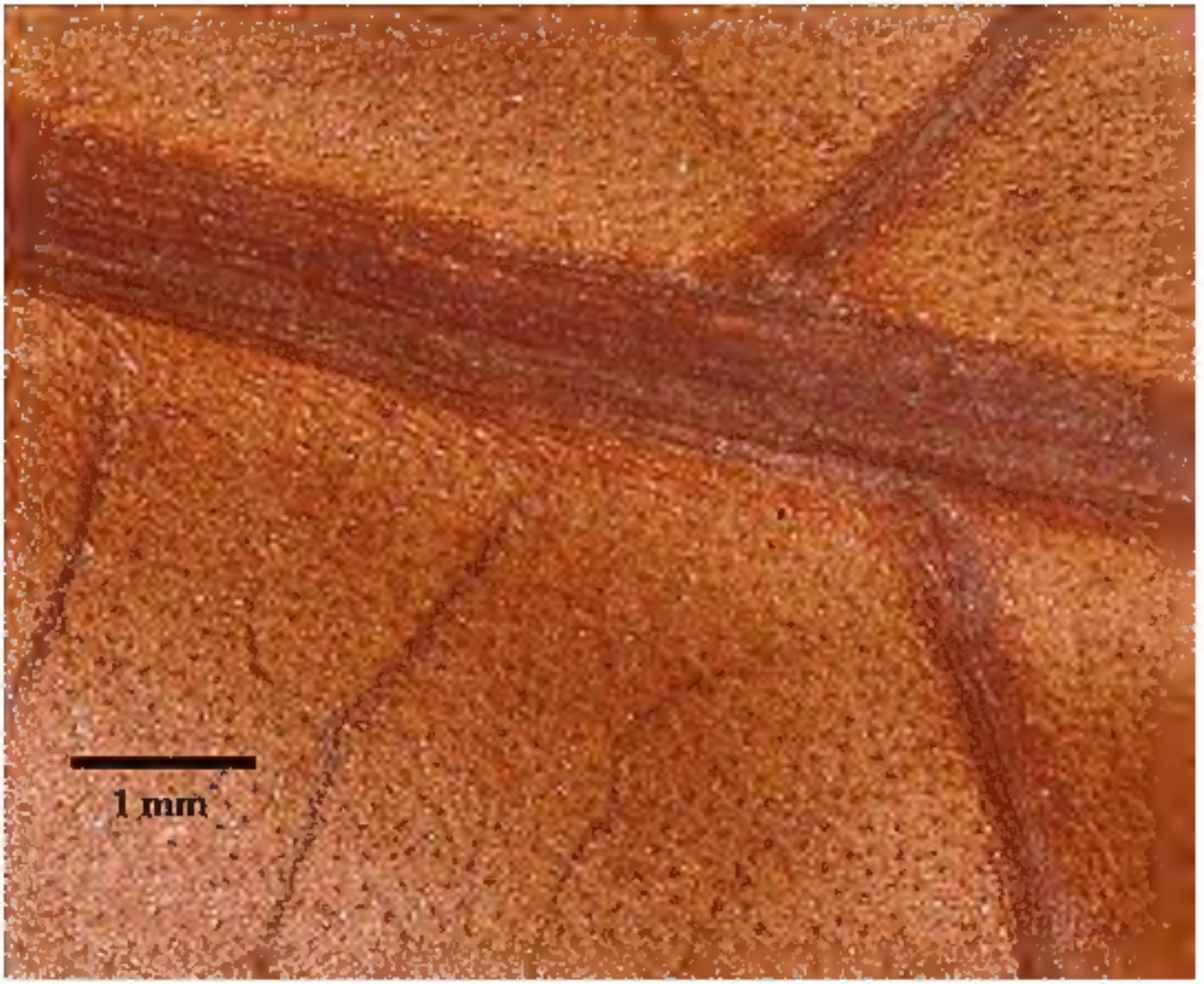

Figure 2. *Tapirira lepidota*. Closeup of lower surface of leaflet (midrib at ca. mid leaflet), showing peltate scales; from *A. Chacón 1067*.

(NY); Rancho Quemado, camino a Estero Guerra, 11 Mar 2009 (st), *R. Aguilar 11922* (NY); Cantón de Golfito, Dist. Jiménez, La Palma, camino a La Tarde, 11 Dec 2008 (♀ fl, fr), *R. Aguilar 11561* (NY); P.N. Corcovado, Río Rincón aguas arriba, camino a Cerro Oro, 30 Jul 1990 (♂ fl), *G. Herrera 4063* (MO); Carbonera, Cerro Osa, 6 Mar 2009 (st), *R. Aguilar 11871* (NY); 18 Sep 1990 (♂ fl), *A. Chacón 1067* (CR, INB, MO); 3 Km. norte de Playa Piro, Puerto Jiménez, Finca Asunción Esquivel, 22 Feb 1989 (fr), *Q. Jiménez et al. 662* (CR, MO); Estación Agujas, 23 Oct 1997 (♂ fl), *A. Azofeifa 481* (INB); Cantón de Golfito, P.N. Corcovado, Valle de Coto Colorado, Punta Estrella y Punta Bejuco, 8 Nov 1993 (♂ fl), *Fco. Quesada & M. Segura 795* (CR, INB, MO); R.N.V.S. Golfito, 28 Feb 1994 (fr), *G. Rivera et al. 2218* (CR); Mar–Apr 1994 (♂ fl), *G. Herrera & G. Rivera s.n.* (USJ); 3 May 2011 (fr), *L. D. Vargas 4419* (INB); P.N. Piedras Blancas, 26 Jan 1999 (fr), *W. Huber & A. Weissenhofer 1416* (CR).

Tapirira lepidota is a relatively small tree, quite common in certain localities, that has been in collections since at least 1989 and has most often been identified as the widespread *T. guianensis* (or its synonym, *T. myriantha* Triana & Planch.), also more or less common in Costa Rica and with which it is locally sympatric. Other than by its peltate scales, the new species differs from *T. guianensis* by its usually smaller stature, unbuttressed trunk with relatively smooth bark (vs. commonly buttressed with strongly fissured bark), stamens ca. 1.3 mm and included (vs. to ca. 2 mm

and barely included to slightly exserted), and green (vs. purple), slightly larger and ± terete (vs. somewhat flattened) mature fruits with a thinner (0.4–0.5 vs 0.5–1.1 mm; not including the thickened ridge along one side) endocarp. A helpful guide for selecting from among collections of *T. guianensis* for examination under a dissecting microscope as possible additional material of the new species is that the leaflets of the latter dry almost concolorously light to darkish tan, while those of *T. guianensis* most often dry tan abaxially but very dark brown or blackish adaxially. Furthermore, even though the size range of leaflets in the two species overlaps completely, in most specimens the leaflets of *T. lepidota* are larger than those of *T. guianensis*. Although an examination of Panamanian and South American material of *T. guianensis* deposited at MO has not revealed any additional material, the new species might be expected to occur on the Caribbean slope of Costa Rica and Panama (in the Bocas del Toro region) as well as northern South America, areas with which the Golfo Dulce region has shown certain phytogeographical affinities (see e.g., Hammel & Zamora 1993: 411). In any case, the presence of the new species in the vicinity of San Vito at around 1000 m elevation, just a few km from the border with Panama, almost guarantees its occurrence in the latter country.

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